

HIGH THROUGHPUT METHODS OF HLA TYPING

ABSTRACT OF THE DISCLOSURE

A method for determining an HLA genotype of a subject is disclosed. The method comprises (a) isolating template nucleic acid from the subject; (b) amplifying the template nucleic acid to generate sufficient product for each allele of at least one gene locus to be determined; (c) hybridizing the template nucleic acid with an immobilized array of capture oligonucleotides, each having a known nucleic acid sequence of an HLA allele; and (d) determining the particular capture oligonucleotide to which the template nucleic acid hybridizes, thereby determining the genotype of the subject. A number of additional methods that can eliminate or abbreviate additional steps are also described. Moreover, the present invention provides a method for determining tissue compatibility using the determined HLA genotype.

Table 1

Primer	SEQUENCE (5' - 3')												MER																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						
C101	5'	HLA-C ex2 221-239																																		
C102	5'	HLA-C Ex2 249-268																																		
C103	5'	HLA-B&C Ex2 210-228																																		
C104	5'	HLA-C Ex2 123-140																																		
C105	5'	HLA-A&C Ex2 5-25																																		
C106	3'	HLA-C Ex3 243-263																																		
C107	3'	HLA-C Ex3 243-263																																		
C108	3'	HLA-B&C Ex3 195-213																																		
C109	3'	HLA-C Ex4 234-251																																		
C110	3'	HLA-C Ex3 258-275																																		
C111	3'	HLA-C Ex3 195-213																																		
C112	3'	HLA-C Ex4 31-49																																		
C113	3'	HLA-C Ex3 134-151																																		
C114	3'	HLA-B & C Ex3 18-36																																		
C115	5'	HLA-B & C Ex3 59-76																																		
C116	3'	HLA-C Ex4 4-23																																		
C117	3'	HLA-C Ex4 4-23																																		
C118	5'	HLA-C Ex3 134-151																																		
C119	3'	HLA-C Ex3 25-42																																		
C120	5'	HLA-C Ex2 195-213																																		
C121	3'	HLA-ABC Ex3 216-233																																		
C122	3'	HLA-A & C Ex 3 195-214																																		
C123	3'	HLA-B & C Ex3 65-84																																		
C124	3'	HLA-C Ex3 131-148																																		
C125	5'	HLA-C Ex2 252-270																																		
C126	5'	HLA-C Ex2 253-270																																		
C127	5'	HLA-C Ex2 85-103																																		
C128	3'	HLA-C Ex2 225-246																																		
C129	3'	HLA-A Ex3 216-233																																		
C130	3'	HLA-ABC Ex3 216-233																																		
C131	3'	HLA-A Ex3 195-213																																		
C132	3'	HLA-A Ex3 48-64																																		
C133	5'	HLA-A Ex2 5-25																																		
C134	5'	HLA-A Ex2 168-186																																		

[illegible]

Table 1

Primer		SEQUENCE (5' - 3')																				MER											
C2F32T	5'	HLA-C Ex2 14-32	C	A	T	G	A	G	G	T	A	T	T	T	C	T	A	C	A	C	C	G	C	T								22	
C2F26A	5'	HLA-C Ex2 5-25	C	A	C	T	C	C	A	T	G	A	G	G	T	A	T	T	T	C	G	A										20	
C2F25C	5'	HLA-C Ex 5-25	C	A	C	T	C	C	A	T	G	A	G	G	T	A	T	T	T	C	T	C										20	
C2F32C	5'	HLA-C Ex2 14-32	T	G	A	G	G	T	A	T	T	T	C	T	A	C	A	C	C	G	C	C										20	
C3R195G	3'	HLA-C Ex 3 195-213	C	C	T	C	C	A	G	G	T	A	G	G	C	T	C	T	G	T	C											19	
C3R195C	3'	HLA-C Ex3 195-213	C	T	C	C	A	G	G	T	A	G	G	C	T	C	T	C	C	G												18	
C3R076A	3'	HLA-C Ex3 76-93	C	C	T	T	G	C	C	G	T	C	G	T	A	G	G	C	G	T												18	
C3R076C	3'	HLA-C Ex3 76-93	C	C	T	T	G	C	C	G	T	C	G	T	A	G	G	C	G	G												18	
C3R076T	3'	HLA-C Ex3 76-93	C	C	T	T	G	C	C	G	T	C	G	T	A	G	G	C	G	A												18	
C3R075TA	3'	HLA-C Ex3 75-93	C	C	T	T	G	C	C	G	T	C	G	T	A	G	G	C	T	A												18	
C2F216A	5'	HLA-C Ex2 198-216	T	A	C	A	A	G	C	G	C	C	A	G	G	C	A	C	A	G	A											19	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
ClCpIA1		Class I Capture Oligo A1	A	C	G	C	C	T	A	C	G	A	C	G	G	C	A	A	A	G	A	T	T	A	C	A	T	C	G	C	C		
ClCpIA2		Class I Capture Oligo A2	G	A	T	G	G	A	G	C	C	G	C	G	G	T	G	G	A	T	A	G	A	A	G	C	A	G	G	A	G		
ClCpIB1		Class I Capture Oligo B1	C	A	G	T	T	C	G	T	G	A	G	G	T	T	C	G	A	C	A	A	G	C	A	C	G	C	C				
ClCpIB2		Class I Capture Oligo B2	C	T	G	C	G	C	G	G	C	T	A	C	T	A	C	A	A	C	C	A	A	G	A	G	C	A	G	C	C		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

Table2

	PRIMER	SEQUENCE (5'-3')										MER	3' seq
DQ01	5' DQB 8V-1	T	C	C	[CT]	C	G	A	G	C	G	20	G
DQ02	5' DQB 26G-1	G	G	A	G	C	G	C	G	C	G	15	G
DQ03	5' DQB 26La-1	A	C	G	G	A	G	C	G	C	G	17	T
DQ04	5' DQB 26Y-2	G	G	A	C	G	G	A	G	C	G	19	A
DQ05	3' DQB 30H-1R	G	A	T	A	C	T	C	C	T	C	24	C
DQ06	3' DQB 30S-1R	G	A	T	C	T	C	T	C	T	C	23	G
DQ07	3' DQB 38V-2R	G	T	C	G	C	T	G	T	C	G	17	T
DQ08	5' DQB 55P-1	T	G	A	C	G	C	C	G	C	G	16	G
DQ09	3' DQB 57D-2R	G	C	T	G	T	T	C	C	A	G	20	A
DQ10	3' DQB 57S-2R	G	C	T	G	T	T	C	C	A	G	21	A
DQ11	3' DQB 57V-1R	G	C	T	G	T	T	C	C	A	G	20	T
DQ12	3' DQB 70R-3R	C	A	A	C	T	C	C	G	C	G	18	A
DQ13	5' DQB 71K-1	G	A	A	G	G	A	C	A	G	A	21	A
DQ14	3' DQB84Q-2R	G	G	T	C	G	T	G	C	A	G	21	C
DQ15	3' DQB 89G-2R	C	A	C	T	C	T	C	C	T	C	21	G
DQCPT1		C	A	C	G	T	C	G	C	T	C	30	C
DQCPT2		C	A	C	G	T	C	G	C	T	C	30	T
DQCPT3		C	A	C	G	T	C	G	C	T	C	30	C
DQCPT4		C	A	C	G	T	C	G	C	T	C	30	C
DQCPT5		C	A	C	G	T	C	G	C	T	C	30	C
DR01	5' DR2S9-4	C	C	C	[AC]	C	A	G	C	A	G	20	A
DR02	5' DR2S10G	C	C	A	G	C	A	C	G	T	G	19	G
DR03	5' DR2S10L-1	[AC]	C	A	G	C	A	C	G	T	G	20	T
DR04	5' DR2S11D-2	C	A	C	G	T	T	C	T	T	G	19	A
DR05	5' DR2S11R-1	C	A	C	G	T	T	C	T	T	G	19	G
DR06	5' DR2S13C-2	C	G	T	T	C	T	C	T	A	G	23	G
DR07	5' DR2S13G-1	C	G	T	T	C	T	T	C	T	G	23	G
DR08	5' DR2S13H-2	A	C	G	T	T	C	T	T	C	A	23	C
DR09	5' DR2S13R-1	C	G	T	T	C	C	T	T	C	A	22	A
DR10	5' DR2S13S-2	C	G	T	T	C	T	T	C	T	C	23	C
DR11	5' DR2S14K-2	C	G	T	T	C	C	T	T	C	A	25	A
DR12	3' DR2R17-1R	C	G	G	A	G	C	G	T	A	G	23	A
DR13	5' DR2S26L-3	C	G	G	A	G	C	G	T	T	G	17	G
DR14	5' DR2S26L-4	A	C	G	G	A	G	C	G	T	G	18	G
DR15	3' DR2R30H-1R	A	C	T	C	C	T	C	T	A	G	22	C
DR16	3' DR2R37D-1R											18	G

DR2R37F-2R

DR17	3'	DR2R37F-2R	T	C	G	C	T	G	T	C	G	A	G	C	G	C	A	C	G	A	19	T	
DR18	3'	DR2R37L-1R			G	C	T	G	T	C	G	A	A	G	C	G	C	A	G	A	G	18	C
DR19	3'	DR2R37N-2R	C		G	C	T	G	T	C	G	A	A	G	C	G	C	A	C	G	T	19	A
DR20	3'	DR2R37S-1R			G	C	T	G	T	C	G	A	A	G	C	G	C	A	C	G	T	17	C
DR21	3'	DR2R37Y-1R			G	C	T	G	T	C	G	A	A	G	C	G	C	A	C	G	T	18	T
DR22	5'	DR2S37YA-1	C	G	C	T	C	G	T	A	C	G	C	G	C	G	T					16	A
DR23	3'	DR2R47F-2R			T	C	C	G	T	C	C	C	C	G	T	G	A	G				18	G
DR24	5'	DR2S52B-3	G	A	G	T	A	C	C	G	C	G	T	A	C	T	C	G	C	A	T	19	A
DR25	3'	DR2R57D-1R	C		T	G	T	C	C	A	G	T	A	C	T	C	G	C	G	C	T	19	A
DR26	3'	DR2R57S-1R			T	G	T	T	C	C	A	G	A	C	T	C	G	C	G	A		21	A
DR27	3'	DR2R57V-1R	C	T	G	T	T	C	C	A	G	T	A	C	T	C	C	T				21	A
DR28	3'	DR2R58E-1R	T	C	A	G	C	T	G	T	C	C	A	G	A							19	T
DR29	3'	DR2R67F-2R	C	G	C	C	T	G	T	C	T	T	C	C	A	G	A	T				19	A
DR30	3'	DR2R67I-2R	C	C	C	G	C	T	C	G	C	C	C	C	T	G						18	C
DR31	3'	DR2R70QR-3	C	A	C	C	G	C	G	C	C	C	C	C	C	G	C					15	G
DR32	3'	DR2R71A-2R			C												C					19	G
DR33	3'	DR2R74E-1R			T	G	C	A	A	T	A	G	G	T	C	C	C	A	C	T	C	C	
DR34	3'	DR2R74L-1R			T	G	C	A	G	T	A	G	G	T	C	C	C	A	C	A	G	C	
DR35	3'	DR2R74Q-2R	G	T	G	T	C	A	G	T	A	A	T	T	G	T	C	C	A	C	T	G	
DR36	3'	DR2R74R-1R	G	T	G	T	C	A	G	T	A	A	T	T	G	T	C	C	A	C	C	G	
DR37	3'	DR2R76G-1R															A	T	G	T	G	T	
DR38	3'	DR2R81Y-1R	C	T	C	T	C	A	C	C	C	C	G	T	C	A	C						
DR39	3'	DR2R86G-1R			T	G	C	A	C	T	G	A	A	G	C	T	C	A	C				
DR40	3'	DR2R86V-1R	C	T	G	C	A	C	T	G	T	G	A	A	G	C	T	C	C	A			
DR41	3'	DR2R78A-1R	C	C	C	C	G	T	A	G	T	T	G	T	C	T	G	C	A	C	C	C	
DR42	3'	DR2R74C-1R																					
DR43	3'	DR2R74T-1R			G	C	A	A	T	A	G	T	A	G	T	C	C	A	C	C	G	C	
DR44	3'	DR2R60T-1R	C	C	T	T	C	T	G	C	T	G	T	T	C	C	A	G	T	G			
DR45	3'	DR2R60G-1R	T	C	C	T	C	T	G	C	T	G	T	T	C	C	A	G	G				
DR46	3'	DR2R85A-1R			A	C	A	G	T	G	A	A	G	C	C	T	C	C	A	C	A	G	
DR47	3'	DR2R47F	C	T	C	C	G	T	C	A	C	C	C	C	G	G	A						
DR48	3'	DR2R47?-1R	C	T	C	C	G	T	C	A	C	C	C	C	G	G	T	A					
DR49	3'	DR2R30a	C																				
DR50	3'	DR2R30b	C	T	C	C	T	C	C	T	G	G	T	A	T	G	G	A	A	G	T	G	
DR51	3'	DR2R37a			T	C	G	C	T	G	T	C	G	A	A	G	C	A	C	G	T	A	
DR52	3'	DR2R37b			C	G	C	T	G	T	C	G	A	A	G	C	C	A	C	G	G	A	
DR53	3'	DR2R37c			C	G	C	T	G	T	C	G	A	A	G	C	C	A	C	G	T	C	
DR54	3'	DR2R37d			T	C	G	C	T	G	T	C	G	A	A	G	C	A	G	G	A		
DR55	3'	DR2R37e			T	C	G	C	T	G	T	C	G	A	A	G	C	C	A	C	G	A	
DR56	3'	DR2R38a	A	C	G	T	C	G	C	T	G	T	C	G	A	A	G	C	A	C	G	A	

		5' Primer	3' Primer	Specificity	Size (bp)
A01	1	C1099	C1137	A*0101, 0102	629
A02	4	C1099	C1030	A*3601	630
A03	2	C1108	C1113	A*0201-17	489
A04	3	C1103	C1110	A*0301,0302	628
A05	15	C1102	C1029	A*1101,1102,6601	552
A06	6	C1104	C1085	A*2301	557
A07	5	C1097	C1113	A*2301,A*2401-07	464
A08	7	C1104	C1031	A*2402-05, 2407	557
A09	10	C1106	C1109	A*2501	400
A10	8	C1077	C1029,021	A*2501,2601,2603,2605,6601,6602,4301	170
A11	9	C1041	C1109	A*2501,2601-05,6601,6602,3401,3402	440
A12	11	C1101	C1109	A*2601,2602,2604,4301	400
B01	12	C1034	C1109	A*4301	442
B02	13	C1077,141	C1030	A*3401,3402	170
B03	14	C1102,142	C1109	A*3401,3402,6601,6602	419
B04	16	C1034	C1111	A*2901,2902	465
B05	17	C1107	C1112	A*3001-05	561
B06	18	C1138	C1143	A*3101	198
B07	19	C1033	C1072	A*3201	259
B08	21	C1033	C1111	A*3201,7401	628
B09	20	C1138	C1136	A*3301-03	200
B10	22	C1102	C1113	A*6801,6802,6901	447
B11	23	C1102	C1032	A*6901	383
B12	24	C1120	C1100	A*8001	494
C01	25	C1120	C1133	A*01,*1,*3601,*3401,*8001	300
C02	79	C1051	C1059	B*5101-05,51v,51GAC,5201	401
C03	80	C1041	C1059	B*5101-05,51v,51GAC,7801-02,1509	451
C04	81	C1040	C1059	B*5201	440

ODDER F6E2H60

		5' Primer	3' Primer	Specificity	Size (bp)
C05	77	Ci043	Ci056,091	B*3501-09,3511,5301	389/340
C06	28	Ci041	Ci064	B*0702-05,8101	619
C07	29	Ci114	Ci064	B*0703	600
C08	30	Ci043	Ci055	B*0801,0802,B51GAC,B*4406	543
C09	31	Ci043	Ci063	B*0801,0802	606
C10	36	Ci046,089	Ci132,098	B*4402-06	546/481
C11	34	Ci083	Ci058	B*4501,45v,4901,5001	600
C12	35	Ci050	Ci062	B*4501,45V,1514	536
D01	42	Ci081	Ci058	B*1301-03	486
D02	43	Ci045	Ci014	B*1401,1402	389
D03	44	Ci048	Ci071	B*1402,3904	187
D04	67	Ci081	Ci086	B*1501,1502,1504-08,1511,1512,1514,1515,1519-21,1525,1526N,1528	124
D05	68	Ci040	Ci057	B*1501,1503-07,1512,1514,1519,1520,1524,1525,4802,4003,13x15,1526N	421
D06	70	Ci052	Ci057	B*1503,1518,1523,1529,4802,3907,72v,Cw0703	486
D07	72	Ci039	Ci076	B*1509,1510,1518,1521,1523	562
D08	73	Ci081	Ci062,082	B*1512,1514,1519	636/637
D09	74	Ci041	Ci124	B*1508,1511,1515,1522,A*68,2501,2601-05,3401,6601-02	553
D10	65	Ci042	Ci067	B*1516,1517	516
D11	47	Ci051,139	Ci060	B*3801,3802	498/508
D12	48	Ci052	Ci060	B*3801,3802,3901-08,6701	612
E01	45	Ci050	Ci060	B*3901-08,6701	507
E02	46	Ci049	Ci060	B*6701	548
E03	51	Ci042	Ci066	B*5701-03	351
E04	52	Ci081	Ci140	B*5701-03,1513,1516,1517,1524,1301-03,13x15	143

Table 1

	5' Primer	3' Primer	Specificity	Size (bp)
E05	50	C1042	B*5801-03	374
E06	49	C1051	B*5801,5104,5301,1513	319
E07	53	C1037	B*1801,1802	458
E08	41	C1094	B*4001,4007	607
E09	40	C1089	B*4001-04,4006-08,4701	627
E10	38	C1089	B*4002-06,4008,4101,4102,4501,45v,4901,5001,4402-05,4701	566
E11	33	C1051	B*4901,5901	385
E12	32	C1094	B*4901,5001,4005,2704,2706,45v	635
F01	57	C1134	B*5401	421
F02	55	C1080	B*5401,5501,5502,5601,4501,45v,5001	383
F03	54	C1052	B*5501,5502,5601,5602,7301,3906	422
F04	56	C1047	B*5601,5602	551
F05	58	C1094	B*2701-09	149/150
F06	75	C1041	B*3501-04,3506-09,3511,5301,1502,1513,5104,1521,4406	369
F07	76	C1038	B*3501-13,18,7801-02,1522	128
F08	59	C1038	B*3701,B*4406,B51GAC	606
F09	60	C1040	B*3701,3902,3908	422
F10	37	C1040	B*4101,4102	605
F11	63	C1047	B*4201,42v	594
F12	66	C1078	B*4601	459
G01	61	C1040	B*4701	414

COOPER FIELDS

	5' Primer	3' Primer	Specificity	Size (bp)
H11	95 CI026	CI129	Cw*0302,0304	522
H12	96 Neg. Control			0

Table 4

Tray	Mix	Primer S	Primer AS	label	
A01	DRM01	DR13	DR31	DR2R70QR	DRB1*0102
A02	DRM02	DR13	DR20	DR2R37S	DRB1*0101,0102,0103,0104
A03	DRM03	DR13	DR30	DR2R67I	DRB1*0103
A04	DRM04	DR13	DR39	DR2R86G	DRB1*0101,0103
A05	DRM05	DR13	DR40	DR2R86V	DRB1*0102,0104
A06	DRM06	DR02	DR39	DR2R86G	DRB1*1001
A07	DRM07	DR02	DR25	DR2R57D	DRB1*1001
A08	DRM08	DR09	DR15	DR2R30H	DRB1*1503
A09	DRM09	DR09	DR17	DR2R37F	DRB1*1608
A10	DRM10	DR09	DR23	DR2R47F	DRB1*1501,1502,1503,1504,1505,1506,1508,1510
A11	DRM11	DR09	DR48	DR2R47?	DRB1*1507,16XX
A12	DRM12	DR09	DR25	DR2R57D	DRB1*1502
B01	DRM13	DR09	DR30	DR2R67I	DRB1*1510,1605,1607
B02	DRM14	DR09	DR29	DR2R67F	DRB1*1601,1603?,1604
B03	DRM15	DR09	DR32	DR2R71A	DRB1*15XX
B04	DRM16	DR09	DR34	DR2R74L	DRB1*1604
B05	DRM17	DR09	DR39	DR2R86G	DRB1*1502,16XX
B06	DRM18	DR09	DR40	DR2R86V	DRB1*1501,1503,1504,1505,1506,1507,1509,1510
B07	DRM19	DR10	DR12	DR17-1R	DRB1*0301,0304,5,6,8-16

Tray	Mix	Primer S	Primer AS	label	
B08	DRM20	DR10	DR21	DR2R37Y	DRB1*11XX,1303,07,11-14,17,21-25,30,33,37,38,44,45,1425
B09	DRM21	DR10	DR19	DR2R37N	DRB1*0301,02,05-15,1109,16,20,28,1301,02,05,06,09,10,15,16,18,20,26-29,31,32,34-36,39-43,1402,03,06,09,12,13,17-19,21,24,27,29,30,33
B10	DRM22	DR10	DR17	DR2R37F	DRB1*1110,12,13,17,1308,19,1401,04,05,07,08,10,11,14-16,20,22,23,26,28,31,32,34-36
B11	DRM23	DR10	DR23	DR2R47F	DRB1*0301,04,05,07-14,1101-16,18-36,39,1301,02,04-06,14-18,20-25,27-31,34,35,39,41-45,1417,21,30,33,35,
B12	DRM24	DR10	DR48	DR2R47?	DRB1*0302,03,06,1117,37,1303,07,08,12,13,19,26,32,33,36-38,40,1401-16,18-20,22-29,31,32,34,36
C01	DRM25	DR10	DR25	DR2R57D	DRB1*0301-07,11,13-16,1301,02,05-11,14-20,22-25,27-29,34-37,39-42,44,1402,03,06,09,12,14,15,17-21,23,24,27,29,30,33,36
C02	DRM26	DR10	DR26	DR2R57S	DRB1*0312,1303,04,12,13,21,30,32,33,38,1413,
C03	DRM27	DR10	DR27	DR2R57V	DRB1*1331
C04	DRM28	DR10	DR28	DR2R58E	DRB1*11XX,1411,
C05	DRM29	DR10	DR29	DR2R67F	DRB1*1101,03-06,09-12,15,22-25,27-30,32,33,35,37-39,1305,07,11,14,18,21,24,26,42,1415,22,25,27
C06	DRM30	DR10	DR30	DR2R67I	DRB1*1102,14,16,20,21,1301-04,08,10,15,16,1922,23,27,28,31-41,45,1416
C07	DRM31	DR10	DR31	DR2R70QR	DRB1*1126,34,1344,1402,06,09,13,17,20,29,30,33
C08	DRM32	DR10	DR34	DR2R74L	DRB1*0820,1123,25,1313,18,1403,12,27
C09	DRM33	DR10	DR46	DR2R85?	DRB1*1106,21,1429
C10	DRM34	DR10	DR39	DR2R86G	DRB1*0302,05,09,14,17,1101,08-12,14,15,19,20,23,24,26-29,31-33,37,39,1302,03,05,07,12-14,21,23,25,26,29-31,33,34,36-39,41,45,1402,03,07,09,13,14,19,22,24,25,27,30,36
C11	DRM35	DR10	DR40	DR2R86V	DRB1*0301,03,04,06-08,10-13,15,16,0820,1102-04,06,07,13,16-18,21,25,34-36,38,1301,04,06,08-11,15,18-20,22,24,27,28,32,35,40,42-44,1401,05,06,08,12,16-18,20,21,23,26,29,32-35
C12	DRM36	DR07	DR21	DR2R37Y	DRB1*0801-08,10-15,17-19,1105,1317
D01	DRM37	DR07	DR18	DR2R37L	DRB1*1201-04,1206

Tray	Mix	Primer S	Primer AS	label	
G06	DRM78	DR05	DR25	DR2R57D	DRB3*0107
G07	DRM79	DR05	DR39	DR2R86G	DRB3*0101-07
G08	DRM80	DR06	DR37	DR2R76G	DRB4*0102
G09	DRM81	DR06	DR38	DR2R81Y	DRB4*0101-04
G10	DRM82	DR06	DR40	DR2R86V	DRB4*0101-05
G11	DRM83	DR04	DR20	DR2R37S	NEG
G12	DRM84	DR04	DR16	DR2R37D	DRB5*0101,04-07,09
H01	DRM85	DR04	DR29	DR2R67F	DRB5*0101-05,08-10
H02	DRM86	DR04	DR32	DR2R71A	DRB5*0106,0202-04
H03	DRM87	DR04	DR34	DR2R74L	DRB5*0104
H04	DRM88	DR04	DR39	DR2R86G	DRB5*0101-05,07-10,0203
H05	DRM89	DR04	DR40	DR2R86V	DRB5*0106,0202,04,05
	Mix	P1		P2	
		15.0 ul		15.0 ul	

Table 5

ID		Location	
CI06	3'	HLA-C Ex3 243-263	Biotin
CI07	3'	HLA-C Ex3 243-263	Biotin
CI08	3'	HLA-B&C Ex3 195-213	Biotin
CI09	3'	HLA-C Ex4 234-251	Biotin
CI10	3'	HLA-C Ex3 258-275	Biotin
CI11	3'	HLA-C Ex3 195-213	Biotin
CI12	3'	HLA-C Ex4 31-49	Biotin
CI13	3'	HLA-C Ex3 134-151	Biotin
CI14	3'	HLA-B & C Ex3 18-36	Biotin
CI16	3'	HLA-C Ex4 4-23	Biotin
CI17	3'	HLA-C Ex4 4-23	Biotin
CI19	3'	HLA-C Ex3 25-42	Biotin
CI21	3'	HLA-ABC Ex3 216-233	Biotin
CI22	3'	HLA-A & C Ex 3 196-214	Biotin
CI23	3'	HLA-B & C Ex3 65-84	Biotin
CI24	3'	HLA-C Ex3 131-148	Biotin
CI28	3'	HLA-C Ex2 229-246	Biotin
CI29	3'	HLA-A Ex3 216-233	Biotin
CI30	3'	HLA-ABC Ex3 216-233	Biotin
CI31	3'	HLA-A Ex3 195-213	Biotin
CI32	3'	HLA-A Ex3 48-64	Biotin
CI35	3'	HLA-C Ex3 25-41	Biotin
CI36	3'	HLA-B & C Ex3 169-185	Biotin
CI44	3'	HLA-B Ex2 219-236	Biotin
CI55	3'	HLA-B Ex3 195-213	Biotin
CI56	3'	HLA-B & C Ex3 44-59	Biotin
CI57	3'	HLA-ABC Ex3 76-92	Biotin
CI58	3'	HLA-B & C Ex3 77-95	Biotin
CI59	3'	HLA-B Ex3 92-111	Biotin
CI60	3'	HLA-B Ex3 201-218	Biotin
CI61	3'	HLA-ABC Ex3 216-233	Biotin
CI62	3'	HLA-B Ex3 229-246	Biotin
CI63	3'	HLA-B Ex3 260-276	Biotin
CI64	3'	HLA-B Ex3 262-279	Biotin
CI65	3'	HLA-B & C Ex3 10-29	Biotin

CI66	3'	HLA-B Ex3 18-36	Biotin
CI67	3'	HLA-B Ex3 184-201	Biotin
CI68	3'	HLA-B & C Ex3 69-87	Biotin
CI69	3'	HLA-A & B Ex3 68-85	Biotin
CI70	3'	HLA-B Ex3 156-173	Biotin
CI71	3'	HLA-B Ex2 173-192	Biotin
CI72	3'	HLA-A & B Ex2 246-264	Biotin
CI73	3'	HLA-B Ex4 168-187	Biotin
CI74	3'	HLA-B Ex3 11-28	Biotin
CI75	3'	HLA-B Ex2 229-245	Biotin
CI76	3'	HLA-ABC Ex3 216-233	Biotin
CI79	3'	HLA-B Ex3 120-136	Biotin
CI82	3'	HLA-A & B Ex3 228-245	Biotin
CI84	3'	HLA-B Ex3 120-136	Biotin
CI86	3'	HLA-B Ex2 226-243	Biotin
CI90	3'	HLA-ABC Ex3 156-172	Biotin
CI91	3'	HLA-B Ex3 44-60	Biotin
CI95	3'	HLA-B Ex2 207-225	Biotin
CI96	3'	HLA-B Ex2 207-226	Biotin
CI98	3'	HLA-B & C EX3 69-87	Biotin
CI100	3'	HLA-ABC Ex3 216-233	Biotin
CI109	3'	HLA-A Ex3 80-100	Biotin
CI110	3'	HLA-A Ex3 212-229	Biotin
CI111	3'	HLA-A Ex3 105-123	Biotin
CI112	3'	HLA-A Ex3 71-88	Biotin
CI113	3'	HLA-A Ex3 110-128	Biotin
CI116	3'	HLA-C Ex3 25-41	Biotin
CI117	3'	HLA-C EX3 183-200	Biotin
CI118	3'	HLA-C Ex3 169-186	Biotin
CI124	3'	HLA-B & C Ex3 195-213	Biotin
CI125	3'	HLA-C Ex4 234-251	Biotin
CI126	3'	HLA-C Ex3 258-275	Biotin
CI127	3'	HLA-C Ex3 195-213	Biotin
CI128	3'	HLA-C Ex3 18-36	Biotin
CI129	3'	HLA-C Ex3 246-265	Biotin
CI131	3'	HLA-B & C Ex3 76-93	Biotin
CI132	3'	HLA-B Ex3 69-86	Biotin
CI133	3'	HLA-A Ex3 20-39	Biotin

CI136	3'	HLA-A Ex2 186-205	Biotin
CI137	3'	HLA-A Ex3 216-232	Biotin
CI140	3'	HLA-A & B 224-262	Biotin
CI143	3'	HLA-A Ex2 184-203	Biotin
CI145	3'	HLA-A Ex2 226-43	Biotin
CI146	3'	HLA-B	Biotin
CI149	3'	Internal Control	Biotin
C3R195G	3'	HLA-C Ex 3 195-213	Biotin
C3R195C	3'	HLA-C Ex3 195-213	Biotin
C3R076A	3'	HLA-C Ex3 76-93	Biotin
C3R076C	3'	HLA-C Ex3 76-93	Biotin
C3R076T	3'	HLA-C Ex3 76-93	Biotin
C3R075TA	3'	HLA-C Ex3 75-93	Biotin

Table 6

ID			PRIMER
DQ01	5'	Biotin	DQB 8V-1
DQ02	5'	Biotin	DQB 26G-1
DQ03	5'	Biotin	DQB 26La-1
DQ04	5'	Biotin	DQB 26Y-2
DQ08	5'	Biotin	DQB 55P-1
DQ13	5'	Biotin	DQB 71K-1
DR01	5'	Biotin	DR2S9-4
DR02	5'	Biotin	DR2S10G
DR03	5'	Biotin	DR2S10L-1
DR04	5'	Biotin	DR2S11D-2
DR05	5'	Biotin	DR2S11R-1
DR06	5'	Biotin	DR2S13C-2
DR07	5'	Biotin	DR2S13G-1
DR08	5'	Biotin	DR2S13H-2
DR09	5'	Biotin	DR2S13R-1
DR10	5'	Biotin	DR2S13S-2
DR11	5'	Biotin	DR2S14K-2
DR12	3'		DR2R17-1R
DR13	5'	Biotin	DR2S26L-3
DR14	5'	Biotin	DR2S26L-4
DR22	5'	Biotin	DR2S37YA- 1
DR24	5'	Biotin	DR2S52B-3
DR85	5'	Biotin	DR2S11A
DR86	5'	Biotin	DR2S14b
	5'	Biotin	DPA - E (PC)